REMARKS

Claims 1, 3-5 and 7-18 were pending in the application. By this amendment, claims 1, 5, 10, 11, 13, 16 and 18 are being amended; marked up versions of the amended claims are attached hereto pursuant to 37 C.F.R. § 1.121(c)(ii). New claims 19-30 are being added, to advance the prosecution of the application. No new matter is involved.

In paragraph 2 which begins at the bottom of page 2 of the Office Action, claims 1 and 5 are rejected under 35 U.S.C .§ 102(e) as being anticipated by U.S. Patent 6,144,353 of McKnight. In paragraph 3 which begins at the bottom of page 3 of the Office Action, claims 3, 4, 7 and 8 are rejected 35 U.S.C. § 103(a) as being unpatentable over McKnight in view of U.S. Patent 6,078,317 of Sawada. On page 5 of the office Action, claims 9-18 are rejected on the same grounds. These rejections are respectfully traversed.

As previously pointed out by Applicant, McKnight merely describes that "a waveform in accordance with a display content" differs from another such waveform due to a difference in the display contents. In contrast, and in accordance with the present invention, the upper limit value for a range of values that may be possibly used as a driving voltage within an entire duration of display is set independently for each of R, G, and B, without having any relationship with the display data. Further in accordance with the present invention, an upper limit value for at least one of R, G, and B differs from the upper limit values for the other colors. For example, the upper limit values would differ for R and B light components, between which the greatest wavelength difference exists. McKnight neither mentions nor suggests setting such upper limit values of driving voltage for respective R, G and B, or differing on upper limit value for at least one of R, G, and B from the other upper limit values for the other colors.

As also previously explained by Applicant, the lower graph in Fig. 2C of McKnight shows that the pixel light intensity gradually increases during each of the display periods for R, G, and B. This increase is simply caused by applying

"lower" voltage closer to 0V to the liquid crystal, as is apparent from Fig. 2B. Further, the graph of Fig. 2C nowhere indicates that the "minimum intensity" differs among the respective R, G, and B. In other words, McKnight clearly illustrates that "no substantial difference exist among the upper levels of the ranges of voltage application" to the liquid crystal for the respective R, G, and B. The present invention therefore could neither have been anticipated by nor made obvious by McKnight from a combination with the other cited references.

Moreover, McKnight nowhere mentions or suggests the feature defined in the newly added claims, which involves providing, in a driving circuit, a limiting circuit that limits (at a later stage) a maximum transmittance voltage level with respect to a driving signal supplied in accordance with a display content.

McKnight does not disclose the configuration of a driving circuit. There is no recognition in such reference regarding "limiting", with respect to a driving signal supplied in accordance with a display content, the maximum transmittance voltage level for each of R, G, and B, according to its transmittance characteristic. Thus, the present invention, particularly as defined in the newly added claims, is neither anticipated by nor made obvious in view of McKnight in combination with the other reference.

In addition to setting forth other features in accordance with the invention, independent claims 1, 5, 10, 11, 13, 16 and 18 are being amended to recite "an upper limit value for a range of values usable within an entire duration of the display as driving voltages for respective R, G, and B light components is set independently for each of R, G, and B light components" and "among said independently set upper limit values for respective R, G, and B light components, an upper limit value for at least one of the colors differs from the upper limit values for the other colors". Consequently, such claims clearly distinguish patentably over McKnight and the attempted combination thereof with Sawada.

New claims 24-30 respectively depend from and further define independent claims 1, 5, 10, 11, 13, 16 and 18 with the further limitations "wherein among said

independently set upper limit values for respective R, G, and B light components, at least the upper limit values for R and B light components differ from one another". Consequently, such claims also clearly distinguish patentably over the art.

Similar comments apply to dependent claims 3, 4, 7-9, 12, 14, 15 and 17 which depend from and contain all of the limitations of one of the independent claims.

With respect to new claims 19-23, and as pointed out above, the cited art does not show or suggest the feature defined therein which involves providing, in a driving circuit, a limiting circuit that limits (at a later stage) a maximum transmittance voltage level with respect to a driving signal supplied in accordance with a display content. Consequently, such claims are also submitted to clearly distinguish patentably over the art.

In conclusion, claims 1, 3-5 and 7-18 and new claims 19-30 are submitted to clearly distinguish patentably over the art for the reasons described above. Therefore, reconsideration and allowance are respectfully requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles telephone number (213) 337-6846 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

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Version with markings to show changes made:

IN THE CLAIMS:

Rewrite claim 1 as follows:

1. (Three Times Amended) A liquid crystal display having liquid crystal sandwiched between a pair of substrates having electrodes for driving the liquid crystal based on respective R, G, and B signals to control transmittance of each of the R, G, and B light components for color display, wherein

each of upper limit values of ranges for driving voltages respectively for R display, G display, and B display applied to the liquid crystal is set independently for R light, G light, and B light, without a control voltage applied to the substrates to control the intensity of R, G, and B light simultaneously[.],

an upper limit value for a range of values usable within an entire duration of display as driving voltages for respective R, G, and B light components is set independently for each of R, G, and B light components, and

among said independently set upper limit values for respective R, G, and B light components, an upper limit value for at least one of the colors differs from the upper limit values for the other colors.

Rewrite claim 5 claims as follows:

5. (Three Times Amended) An electrically controlled birefringence type liquid crystal display having liquid crystal sandwiched between a pair of substrates having electrodes for driving the liquid crystal based on a liquid crystal control driving signal for R light, a liquid crystal control driving signal for G light, and a liquid crystal control driving signal for B light to control transmittance of each of the R, G, and B light components for color display, wherein

each of upper limit values of ranges for driving voltages respectively for R display, G display, and B display applied to the liquid crystal is set

independently for R light, G light, and B light, without a control voltage applied to the substrates to control the intensity of R, G, and B light simultaneously[.],

an upper limit value for a range of values usable within an entire duration of the display as driving voltages for respective R, G, and B light components is set independently for each of R, G, and B light components, and

among said independently set upper limit values for respective R, G, and B light components, an upper limit value for at least one of the colors differs from the upper limit values for the other colors.

Rewrite claim 10 as follows:

10. (Twice Amended) A liquid crystal display having liquid crystal sandwiched between a pair of substrates having electrodes for driving the liquid crystal based on respective R, G, and B signals to control transmittance of each of the R, G, and B light components for color display, wherein

each of upper limit values of ranges for driving voltages for application to the liquid crystal is set independently for each of R, G, and B light, without a control voltage applied to the substrates to control the intensity of R, G, and B light simultaneously, [and]

the maximum difference among the set voltages stays within 20%[.],

an upper limit value for a range of values usable within an entire duration of the display as driving voltages for respective R, G, and B light components is set independently for each of R, G, and B light components, and

among said independently set upper limit values for respective R, G, and B light components, an upper limit value for at least one of the colors differs from the upper limit values for the other colors.

Rewrite claim 11 as follows:

11. (Twice Amended) A liquid crystal display having liquid crystal sandwiched between a pair of substrates having electrodes for driving the liquid crystal, and which shows non-transmittance to the light when no voltage is applied,

for applying driving voltages to the liquid crystal based on each of R, G, and B signals to control transmittance of each of the R, G, and B light components for color display, wherein

each of upper limit values for defining the maximum light transmittance of the liquid crystal, of ranges of driving voltages applied to said liquid crystal, is set independently for each of R, G, and B light, without a control voltage applied to the substrates to control the intensity of R,G, and B light simultaneously[.],

an upper limit value for a range of values usable within an entire duration of the display as driving voltages for respective R, G, and B light components is set independently for each of R, G, and B light components, and

among said independently set upper limit values for respective R, G, and B light components, an upper limit value for at least one of the colors differs from the upper limit values for the other colors.

Rewrite claim 13 as follows:

13. (Twice Amended) A liquid crystal display, wherein

liquid crystal is sandwiched between a pair of substrates,

individual pixel electrodes are formed for each pixel on one of said substrates,

R, G, and B driving signals corresponding to each of said pixel electrodes are applied for driving the liquid crystal by the potential difference between said pixel electrodes and opposing electrodes formed on the other substrate, to control the transmittance of each of the R, G, and B light components for color display, and

each of upper limit values of ranges for driving voltages respectively for said R, G, and B driving signals applied to said pixel electrodes is set independently for R, G, and B light, without a control voltage applied to the substrates to control the intensity of R, G, and B light simultaneously[.],

an upper limit value for a range of values usable within an entire duration of the display as driving voltages for respective R, G, and B light components is set independently for each of R, G, and B light components, and

among said independently set upper limit values for respective R, G, and B light components, an upper limit value for at least one of the colors differs from the upper limit values for the other colors.

Rewrite claim 16 as follows:

16. (Twice Amended) A reflective type liquid crystal display having liquid crystal sandwiched between a pair of substrates, a reflection electrode formed on one of said pair of substrates, for driving the liquid crystal by the potential difference between said reflection electrode and a transparent electrode formed on the other substrate, to reflect the incident light from said transparent electrode side at said reflective electrode and to control the amount of light of each of the R, G, and B light components re-emitted from said transparent electrode for color display, wherein

each of upper limit values of ranges for driving voltages for R display, G display, and B display applied to said liquid crystal by said transparent electrode and said reflection electrode is set independently for R, G, and B light, without a control voltage applied to the substrates to control the intensity of R, G, and B light simultaneously[.],

an upper limit value for a range of values usable within an entire duration of the display as driving voltages for respective R, G, and B light components is set independently for each of R, G, and B light components, and

among said independently set upper limit values for respective R, G, and B light components, an upper limit value for at least one of the colors differs from the upper limit values for the other colors.

Rewrite claim 18 as follows:

18. (Amended) A liquid crystal display having a liquid crystal display panel configured by sandwiching liquid crystal between a pair of substrates, wherein:

a plurality of pixels are provided within said liquid crystal display panel, each of said plurality of pixels being separately assigned to one of R,G, and B colors;

individual pixel electrodes are formed for each of said plurality of pixels on one of said pair of substrates;

R, G, and B driving signals corresponding to each of said pixel electrodes are applied for driving the liquid crystal by the potential difference between said pixel electrodes and an opposing common electrode formed on the other substrate, to control the transmittance of each of the R, G, and B light components for colored display; [and]

each of upper limit values of ranges for driving voltages respectively for said R, G, and B driving signals applied to said pixel electrodes is set independently for R, G, and B, light[.],

an upper limit value for a range of values usable within an entire duration of the display as driving voltages for respective R, G, and B light components is set independently for each of R, G, and B light components, and

among said independently set upper limit values for respective R, G, and B light components, an upper limit value for at least one of the colors differs from the upper limit values for the other colors.